

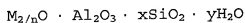
**US Claims**

1. A process for the preparation of a disintegrant, suitable for use in a composition in the form of a moulded body, comprising forming by a dry granulation process a granular composition comprising a swelling clay and a water insoluble inorganic material.
2. A process for the preparation of a disintegrant, suitable for use in a composition in the form of a moulded body, comprising forming by a dry granulation process a granular composition comprising a swelling clay, a water insoluble inorganic material and a water-swellable agent which, in its anhydrous state, comprises no more than 20 per cent of the combined weight of said swelling clay, said water insoluble material and said water-swellable agent.
3. A process according to claim 1 or 2 characterised in that the dry granulation process comprises blending ingredients of the granular composition in a mixer followed by roller compaction of the mixture so produced.
4. A process according to claim 1 or 2 characterised in that the roller pressure during roller compacting is in the range 8 to 25 MPa.
5. A process according to claim 1 or 2 characterised in that the granules are screened to a size in the range 500 to 3000  $\mu\text{m}$ .
6. Disintegrant granules, said granules comprising a water swelling clay, a water insoluble inorganic material and a water-swellable agent which, in its anhydrous state, comprises no more than 20 per cent of the combined weight

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of said water swelling clay, said water insoluble inorganic material and said water-swellaable agent.

7. Granules according to claim 6 characterised in that the water-swellaable agent is present in an amount comprising no more than 7.5 per cent of the combined weight of said swelling clay, said water insoluble inorganic material and said water-swellaable agent.
8. Granules according to claim 6 characterised in that the water-swellaable agent is present in an amount comprising at least 1 per cent of the combined weight of said swelling clay, said water insoluble material and said water-swellaable agent.
9. Granules according to claim 6 characterised in that the swelling clay is a smectite clay.
10. Granules according to claim 9 characterised in that the smectite clay is a bentonite clay.
11. Granules according to claim 6 characterised in that the water insoluble inorganic material is silica, a material containing at least 70 per cent silica by weight or an aluminosilicate.
12. Granules according to claim 11 characterised in that the water insoluble inorganic material is a crystalline aluminosilicate which is a zeolite having the empirical formula



wherein M represents a metallic cation having a valency of n, x indicates the ratio of atoms of silica to atoms of

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aluminium and  $\gamma$  indicates the ratio of molecules of water to atoms of aluminium.

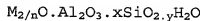
13. Granules according to claim 12 characterised in that the zeolite is a zeolite P, a zeolite A or a zeolite X.
14. Granules according to claim 12 characterised in that the zeolite is a zeolite P in which M is an alkali metal and  $x$  has a value in the range 1.8 to 2.66.
15. Granules according to claim 12 characterised in that zeolite is a zeolite P having a water content in the range 9 to 12 per cent by weight of the zeolite.
16. Granules according to claim 6 characterised in that the relative amounts of swelling clay and crystalline aluminosilicate in the granular disintegrant are in the ratio of 9 : 1 to 1 : 9 by weight clay : aluminosilicate.
17. Granules according to claim 6 characterised in that the swelling clay is present in the granules in an amount in the range 20 to less than 50 per cent by weight and the water insoluble material is present in the granules in an amount in the range 35 to 70 per cent by weight.
18. Granules according to claim 6 characterised in that the water-swellaable agent has an average primary particle size of up to 600  $\mu\text{m}$ .
19. Granules according to claim 6 characterised in that the water-swellaable agent has a water-swelling capacity of at least 5  $\text{cm}^3/\text{g}$ .

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20. Granules according to claim 6 characterised in that the water-swellaable agent is natural cellulose, cross-linked cellulose, carboxymethyl cellulose, sodium carboxymethyl cellulose, cross-linked sodium carboxymethyl cellulose, pre-gelatinised starch, cross linked starch, or cross linked polyvinyl pyrrolidone.
21. A tablet of compacted particulate detergent composition comprising non-soap surfactant and detergency builder, wherein the tablet or a discrete region thereof comprises disintegrant granules comprising a water-swelling clay, a water-insoluble inorganic material and a water-swellaable agent.
22. A tablet according to claim 21 wherein the water-swellaable agent in its anhydrous state, comprises no more than 20% by weight of the combined weight of the water-swelling clay, the water-insoluble inorganic material and the water-swellaable agent.
23. A tablet according to claim 21 wherein the water-swelling clay is a smectite clay.
24. A tablet according to claim 23 wherein the smectite clay is a bentonite clay.
25. A tablet according to claim 24 wherein the bentonite clay is produced by treating calcium-form bentonite with a compound of sodium.
26. A tablet according to claim 21 wherein the water-insoluble inorganic material is silica, a material containing at least 70% silica by weight or an aluminosilicate.

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27. A tablet according to claim 26 wherein the aluminosilicate is a zeolite having the empirical formula;



wherein M represents a metallic cation having a valency of n, x indicates the ratio of atoms of silica to atoms of aluminium and y indicates the ratio of molecules of water to atoms of aluminium.

28. A tablet according to claim 27 wherein the zeolite is a zeolite P or zeolite A.
29. A tablet according to claim 28 wherein the zeolite is zeolite P in which M is an alkali metal cation and x has a value in the range of from 1.8 to 2.66.
30. A tablet according to claim 27 wherein the zeolite is a zeolite P having a water content in the range of from 9 to 12% by weight.
31. A tablet according to claim 27 wherein the zeolite P is a maximum aluminium zeolite P.
32. A tablet according to claim 21 wherein the relative amount of the water-swelling clay and the water-insoluble inorganic material in the disintegrant granule is in the weight ratio range of from 2:1 to 1:4 by weight of the water-swelling clay: water-insoluble inorganic material.
33. A tablet according to claim 21 wherein the water-swellaible agent is selected from the group consisting of cellulose, cross-linked cellulose, carboxymethyl cellulose, sodium carboxymethyl cellulose, cross-linked sodium carboxymethyl

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cellulose, pre-gelatinised starch, cross-linked starch and cross-linked polyvinyl pyrrolidone.

34. A tablet according to claim 33 wherein the water-swella-ble agent is a cross-linked sodium carboxymethyl cellulose.
35. A tablet according to claim 21 wherein the water-swella-ble agent comprises in its anhydrous state 1 to 8% by weight of the combined weight of the swelling clay, water-insoluble inorganic material and the water-swella-ble agent.
36. A tablet according to claim 21 wherein the water-swella-ble agent in the disintegrant granule is present in an amount of less than 2% by weight based on the total weight of the tablet composition.
37. A tablet according to claim 21 wherein the water swella-ble agent has an average primary particle size of up to 600 um.
38. A tablet according to claim 21 wherein the water-swella-ble agent has a water-swelling capacity of at least 5 cm<sup>3</sup>/gram.
39. A tablet according to claim 21 wherein the tablet contains from 1 to 15% by weight of the disintegrant granules based on the total weight of the tablet composition.
40. A tablet according to claim 21 wherein the disintegrant granules have a mean particle size in the range of from 700 to 1200 micrometers.

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41. A tablet according to claim 21 comprising disintegrant granules comprising a bentonite clay produced by treating calcium-form bentonite with a compound of sodium, maximum aluminium zeolite P and a cross-linked sodium carboxymethyl cellulose.
42. A tablet according to claim 21 wherein the disintegrant granule comprises 20 to 45% by weight of the water-swelling clay, 45 to 70% by weight of the water-insoluble inorganic material and 3 to 9% by weight of the water-swellaable agent based on the weight of the disintegrant granule.
43. A tablet according to claim 21 which further comprises water-soluble disintegration-promoting particles containing at least 40%, by weight of the particles, of one or more materials selected from the group consisting of;
- i) compounds with water-solubility exceeding 50 grams per 100 grams water at 20°C, and
  - ii) sodium tripolyphosphate containing at least 50% of its own weight of the phase I anhydrous form, and
  - iii) sodium tripolyphosphate which is partially hydrated so as to contain water of hydration in an amount which is at least 0.5% by weight of the sodium tripolyphosphate in the particles.
44. A tablet according to claim 43 wherein the compounds with water-solubility exceeding 50 grams per 100 grams water at 20°C are selected from sodium acetate, sodium citrate dihydrate or urea.
45. A tablet according to claim 44 wherein the sodium acetate comprises sodium acetate trihydrate.

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46. A tablet according to claim 43 wherein the water-soluble disintegration-promoting particles are present in an amount of from 5% to 25% by weight based on the total weight of the composition.
47. A process for making a tablet of compacted particulate detergent composition comprising non-soap surfactant and detergency builder, the process comprising mixing disintegrant granules comprising a water-swelling clay, a water-insoluble inorganic material and a water swellable agent with the other constituents of the detergent composition to produce a particulate detergent composition, placing a quantity of the resultant particulate detergent composition within a mould, and, compacting the composition within the mould to produce the tablet.